

REMARKS

The Final Office Action mailed November 19, 2004, has been received and reviewed. Claims 1 through 12 and 14 through 29 are currently pending in the application. Claims 1 through 5 and 14 through 22 stand rejected. Claims 6 through 12 and 23 through 29 have been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claims is noted with appreciation. Applicants propose to amend claims 7 and 24, cancel claims 6 and 23 and rewrite them as independent claims 38 and 39. Reconsideration is respectfully requested.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,914,524 to Komenaka in View of U.S. Patent No. 5,990,537 to Endo et al.

Claims 1 through 5 and 14 through 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Komenaka (U.S. Patent No. 5,914,524) in view of Endo et al. (U.S. Patent No. 5,990,537). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Komenaka discloses a semiconductor device fuse comprising a titanium nitride layer and a tungsten layer over the titanium nitride layer. (Komenaka, cols. 1 lines 46- col. 2, line 6.) Endo discloses a semiconductor device with a fuse comprising a substrate 31 a field oxide layer 36 on the substrate 31, a fuse 35/35A on the field oxide layer 36, and insulating layer 37 on the field oxide layer 36 and fuse 35/35A. (Endo, col. 3, lines 1-5; FIG. 3B.) A passivation layer 38 can be formed over the insulating layer 37, but is not located over the fuse 35/35A. (Endo, col.

3, lines 6-7; FIG. 3.) Further, a nitride layer 39 may be formed over the passivation layer 38. (Endo, col. 3, line 8; FIG. 3.) Finally, a metal guard ring 41B can be formed under the passivation layer 38. (Endo, FIG. 3A.) Neither the metal guard ring 41B, the passivation layer 38 nor the nitride layer 39 are formed over or part of the fuse.

By way of contrast, independent claim 1 of the presently claimed invention recites a semiconductor circuit fuse comprising an insulating substrate, a refractory metal nitride layer disposed above the insulating substrate and a tungsten silicide layer disposed over the refractory metal nitride layer. Claim 14 of the presently claimed invention recites a semiconductor circuit fuse comprising an insulating substrate, a refractory metal nitride layer disposed above the insulating substrate and a silicide layer disposed over the refractory metal nitride layer. Applicant respectfully submits that the combination of Komenaka in view of Endo fails to teach or suggest every element of either claim 1 or 14 of the presently claimed invention. Further, no motivation exists to combine the teachings of the cited references. More specifically, Komenaka is directed to addressing the problem that a fuse comprising multilayer structure using TiN/Ti/W films are not completely blown. (Komenaka, col. 1, lines 47-52.) Komenaka discloses a semiconductor device having a fuse element comprising TiN/Ti/W films in which a residual fuse element film is prevented from remaining on the fuse itself. Thus, no motivation exists in Komenaka to replace any of the TiN/Ti/W films.

The Examiner acknowledged that Komenaka fails to teach or suggest a (tungsten) silicide layer disposed over the refractory metal nitride layer. (Office Action, page 2.) Endo does not correct this deficiency as Endo fails to teach or suggest that the fuse be made of layers of metals. Instead, Endo teaches that neither the metal guard ring 41B, the passivation layer 38 nor the nitride layer 39 are formed over the fuse or as part of the fuse. (Endo, col. 3, lines 1-8.) Thus, Endo does not teach or suggest that the fuse comprise a (tungsten) silicide layer disposed over the refractory metal nitride layer. (Endo, col. 4, lines 35-40.) As stated, because Komenaka is directed to methods of preventing a film from remaining on a TiN/Ti/W fuse, no motivation exists to replace these films. Accordingly, applicants submit that the combination of references fails to teach or suggest every element of independent claim 1 or 14. As such, independent claims 1 and 14 are allowable.

Claims 2 through 5 are each allowable as depending, either directly or indirectly, from

allowable claim 1.

Claims 15 through 23 are each allowable as depending, either directly or indirectly, from allowable claim 14.

Objections to Claims 6 through 12 and 23 through 29/Allowable Subject Matter

Claims 6 through 12 and 23 through 29 stand objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. Applicants have rewritten claims 6 and 23 as independent claims 38 and 39 and submit these claims are allowable.

ENTRY OF AMENDMENTS

The proposed amendments to the claims above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search. Finally, if the Examiner determines that the amendments do not place the application in condition for allowance, entry is respectfully requested upon filing of a Notice of Appeal herein.

CONCLUSION

Claims 1-5, 7-12, 14-22, 24-29 and 38-39 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Office determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



Krista Weber Powell
Registration No. 47,867
Attorney for Applicants
TRASKBRITT
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: January 19, 2005

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